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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,873	12/29/2005	Josef Lutz	AT03 0037 US1	6752

65913 7590 03/09/2009

NXP, B.V.
NXP INTELLECTUAL PROPERTY DEPARTMENT
M/S41-SJ
1109 MCKAY DRIVE
SAN JOSE, CA 95131

EXAMINER	
BAYOU, AMENE SETEGNE	
ART UNIT	**PAPER NUMBER**
3746	

NOTIFICATION DATE	DELIVERY MODE
03/09/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/562,873	LUTZ, JOSEF	
	Examiner	Art Unit	
	AMENE S. BAYOU	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it contains the word "means". Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7-18, 22-26 are rejected under 35 U.S.C. 102(b) as being unpatentable over Biegelsen et al. (US patent number 6089534).

4. In re claim 1, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- A device (10) ,in figure 1,6 and 7,for generating a medium stream, which device (10) comprises a chamber, which chamber comprises chamber walls (18,20) lying opposite one another and at least one medium opening (16) for the medium stream and is equipped with a diaphragm means (30), which diaphragm means (30) is provided and constructed for generating the medium stream and which diaphragm means (30), in an inactive operating state of the device (10), is arranged substantially untensioned (column 3,lines 16-19) in the chamber between the chamber walls (18,20) and associated with which diaphragm means (30) are drive means (43-48,83-88), responsive to electrical drive signals, for driving the diaphragm means (30) to deform the same, the drive means (voltage source denoted as "V" connected to each electrodes) being arranged to impose a deformation (column 4,lines 10-18) on the diaphragm means (30) in an active operating state of the device (10), during which deformation the diaphragm means (30) have an inner mechanical tension. In regards to the limitation "to generate sound", any diaphragm as it is excited will vibrate and generate sound (which would be audible to ear or inaudible based on the frequency of vibration. Please also see the argument section below) .Also It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the

claimed structural limitations. ***Ex parte Masham, 2 USPQ2d 1647 (1987).***

5. In re claim 2, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The drive means ("V") comprise electrodes (43-48,83-88) arranged on the chamber walls (18,20) lying opposite one another, further including a control signal source configured to apply a voltage to the electrodes in a manner that deforms the diaphragm (30) ,in figures 4-6 and in column 4,lines 20-25 and column 5,lines 1-10 in figure 6.

6. In re claim 3, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (30) comprises a metal foil, in column 3, lines 48-51.

7. In re claim 4, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (30) comprises a foil made of a dielectric material, in column 3, lines 48-51.

8. In re claim 7, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (30) comprises two end regions (32, 34) provided a distance apart from one another, which end regions (32, 34) are fixed in the chamber, in figures 6 and 7.

9. In re claim 8, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The drive means (denoted as 'V' ,in figures 6 and 7) contain an electromechanical drive element (controller to apply voltage ,in column 4,line 47-48), and the diaphragm means (30) has an end portion (32) that is connected to the electromechanical drive element (64 or 70) in figures 6 and 7.

10. In re claim 9, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The chamber (between walls 18 and 20) is of substantially cuboidal construction and comprises two end walls (18, 20) lying opposite one another, in figure 1.

11. In re claim 10, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The chamber comprises at least two medium openings (14, 16) provided spaced apart from one another, in figure 1.

12. In re claim 11, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (30) has at least substantially constant thickness, in figure 1 and column 3, lines 53-57.

13. In re claim 12, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (30) is fixed with two opposing end regions (32, 34) to the end walls of the essentially cuboidal chamber in figures 6 and 7.

14. In re claim 13, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The drive means ("V") are designed to impose a deformation having at least a pre-determinable frequency, in figure 6 and column 5 lines 11-21.

15. In re claim 14, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The drive means ("V") are designed to impose a cyclic deformation in the form of a traveling wave on the diaphragm means (30), in figure 6 and column 5 lines 11-21

16. In re claim 15, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (30) is fixed with one end (32) region close to one end of the cuboidal chamber to the one chamber wall (18) of the mutually opposed chamber walls (18, 20) and with an opposite end region (34) close to the opposite end of the chamber to the other chamber wall (20) of the mutually opposed chamber walls in figures 1 and 6.

17. In re claim 16, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (30) comprises a transition portion (shown by dotted line) extending in operation substantially at right angles to the chamber walls (18, 20) lying opposite one another, in figure 5.

18. In re claim 17, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- Medium openings (14, 16) are provided at both ends of the chamber, in figure 1.

19. In re claim 18, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The medium stream is a stream of a gaseous medium, in column 2 lines 61-63.

20. In re claim 22, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means (102) and/or the chamber walls have an insulating layer (97), in figure 8 and column 6, lines 1-4.

21. In re claim 23, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The diaphragm means have a structured (different layers) surface, in column 3, lines 49-51. In addition since every micro/macro surface has a certain degree of roughness Biegelsen et al. '534 also inherently disclose a structured surface.

22. In re claim 24, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- A device (10) ,in figure 1,6 and 7,for generating a medium stream, the device (10) comprising a chamber having chamber walls (18,20) lying opposite one another and at least one medium opening (16) for passing a medium stream, a diaphragm (30) and extending laterally between the opposing chamber walls (18,20) the diaphragm (30) being substantially untensioned in the chamber

between the chamber walls (18,20) in an active state (column 3,lines 16-19), electrodes (43-48,53-58) on each of the opposing chamber walls (18,20) and responsive to electrical drive signals (denoted as "V") by imposing deformation (column 4,lines 10-18) on the diaphragm in an active operating state of the device ,during which deformation on the diaphragm (30) has an inner mechanical tension, the deformation causing fluid flow in the chamber in a direction that is about parallel to the chamber walls (18,20). In regard to the limitation "including sound waves" and "to generate sound that is audible by a human ear" please refer to claim 1 above and argument section for discussion.

23. In re claim 25, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The electrodes (43-48, 53-58) are separate from and not in contact with the diaphragm (30), in figure 6.

24. In re claim 26, Biegelsen et al. '534 disclose a micromechanical device for generating medium stream including:

- The electrodes (43-48,53-58) are arranged on the chamber walls (18,20)and electrically coupled to apply an electric field signal (Attached to voltage sources 'V") to cyclically draw (column 5,lines 6-9 and lines 18-23) the diaphragm (30) towards a first chamber wall (18 or 20) and to repel the diaphragm from another chamber wall (18 or 20),in figure 6 and column 4,lines 57-65.

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

26. Claims 5 and 6 are rejected under 35 U.S.C 103(a) as being unpatentable over Biegelsen et al. '534 in view of Bryant et al. (US patent number 6856073).

27. In re claim 5, Biegelsen et al. '534 disclose the claimed invention except the following limitation which is taught by Bryant et al '073 B2:

- The diaphragm means (10) consists at least partly of piezoelectric material, in column 5, lines 27 and 28.

28. It would have been obvious to one skilled in the art at the time the invention was made to modify the device of Biegelsen et al. '534 by selecting piezoelectric material for the diaphragm as taught by Bryant et al '073 B2 because it is light weight, and also excellent to receive and transmit response when induced by voltage.

29. In re claim 6, Biegelsen et al. '534 in view of Bryant et al.'073 as applied to claim 5 disclose the claimed invention:

Bryant et al.'073 disclose:

- The diaphragm means (10) comprises an electrode, in column 8 lines 12 and 13.

30. Claims 19 -21 are rejected under 35 U.S.C 103(a) as being unpatentable over Biegelsen et al. '534.

31. In re claim 19 and 20, Biegelsen et al. '534 disclose the a device for the generation of sound or as a pump by means of the medium stream generated because It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. ***Ex parte Masham, 2 USPQ2d 1647 (1987).***In regards to the limitation "in response to electrical sound-driver signals applied to the drive means by a controller", the limitation simply states the application of electric signals to move the diaphragm which is already disclosed by Biegelsen et al. '534.The limitation "sound driver" state the intended purpose which is to apply the specific signals so that the diaphragm will vibrate at a desired frequency to generate the required sound level.

32. In re claim 21, Biegelsen et al. '534 disclose the claimed invention except mentioning that a plurality of chambers is provided in the device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make plurality of chambers instead of one, if needed, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. **St. *Regis Paper Co. v. Bemis Co., 193 USPQ 8.***

Alternate Claim Rejections - 35 USC § 103

33. Claim 19 is rejected under 35 U.S.C 103(a) as being unpatentable over Biegelsen et al. '534 in view of Uchikawa (US patent number 3947644).

34. In re claim 19 Biegelsen et al. '534 disclose the claimed invention except the following limitation which is taught by Uchikawa '644.

- Electrical sound driver signals applied to the drive means by a controller, in column 2, lines 20-30.

35. It would have been obvious to one skilled in the art to apply specific sound driver signals to the diaphragm as taught by Uchikawa '644 in the case where the diaphragms are intended to be used as acoustic devices.

Response to Arguments

36. Applicant's arguments, see pages 1-3, filed on December 15 2008, with respect to the rejection(s) of claim(s) 1-23 under 35 U.S.C 112, 35 U.S.C 102(b) and 35 U.S.C 103(a) have been fully considered but are not persuasive.

37. Applicant argues that the micromechanical valve of Biegelsen et al. '534 does not generate a "medium stream" since "air does not carry sound". Examiner respectfully disagrees. As discussed and admitted by the applicant (see page 1 of the disclosure) a medium stream is understood to be a pumped flow of fluid from one point to another. such as using a diaphragm that is being deformed which is analogous to a progressive wave or traveling wave. Thus the assertion that "a medium stream need to carry air and generate sound"is incorrect. Using a medium stream to generate sound is just one application whereas in other application the same medium stream can be used to convey gaseous medium in miniaturized devices (which is also clearly discussed by the applicant in page 1 and 2 of the specification).Thus the micromechanical device of Biegelsen et al. '534 ,although used as a valve it can as well be used as a pumping

device (as is widely known in the art many micromechanical devices used interchangeably as pump or pump).In the instant case for example as shown in figure 5,if air is supplied through 50 (see column 3,lines 60-67) the diaphragm (30) as it progresses from one position to the next will push the air in the chamber towards aperture 16.It is inherent that as the diaphragm moves and expels air sound waves are emitted (this is also admitted by applicant in page 8,line 23-26 of the specification) any diaphragm as it vibrates crates sound.

38. In regards to claims 19-21, applicant argues that the examiner's assertion of "a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations" is not correct because the '534 reference cannot operate as claimed such as to generate sound. Examiner again respectfully disagrees based on the same reason given in response to the argument above. In addition examiner would like to point out that applicant in page 14 last paragraph of the specification asserted that the same device that can be used to pump a fluid (liquid or gas) can interchangeably be used to generate sound wave.

39. In regard to claims 19-21 applicant correctly notes the typo error and the body of the rejection is corrected to agree with the statement rejection which is Biegelsen et al. '534.Since all the claims 19-21 are dependent on claim 1 which is rejected based on the reference Biegelsen et al. '534 it is clear that the rejection of

claims 19-21 is also based on the '534 reference as stated in the statement of the rejection.

Conclusion

40. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amene S. Bayou whose telephone number is 571-270-3214. The examiner can normally be reached on Monday-Thursday, 9:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

/AB/